



### **ABSTRACT**

The properties of a water-lain sediment body are determined from a measurement of grain size distribution and deposit thickness at one location in the body is disclosed. The flow properties at the measured location are determined, the flow properties are extrapolated back to the inlet through which the depositing flow was emitted, at least one property of the water-lain sediment throughout the sediment body is determined by modeling the flow properties using the extrapolated flow properties at the inlet as a boundary condition. The flow properties associated with the sediment body include flow velocity, suspended sediment volume fractions, deposition time, and flow height. The properties of the water-lain sediments include, in addition to the flow properties associated with deposition of the sediments, the thickness of the sediment body, the size of the body, the shape of the body, and the grain size distribution at each point within the body.